

Claims

Claims 1–46 (Canceled).

47. A rotary pressure swing adsorption process for separating a first component from a second component of a feed gas mixture where the first component is more readily adsorbed by an adsorbent material at increased pressure relative to the second component, comprising:
providing a rotary PSA device having a rotor for rotation relative to a stator and a plurality of adsorbent beds, each bed having a flow path through adsorbent material from a first end to a second end;
supplying a feed gas mixture comprising at least the first component and the second component to a first end of a first adsorbent bed at a higher pressure relative to a lower pressure of a pressure swing cycle;
withdrawing a gas from the first adsorbent bed; and
providing a control mechanism operating to control flow of at least a portion of a withdrawn gas for supply to a second adsorbent bed, thereby substantially depleting the second adsorbent bed of the component having a substantially reduced concentration in the withdrawn gas to a level of substantially equal to that prior to introducing the feed gas mixture to the second bed.